What is claimed is:

1. A device, comprising:

a structure adapted to be chronically placed within a vessel of a biosystem;

sensing circuitry attached to the structure and adapted to be placed in the vessel with the structure, wherein the sensing circuitry is adapted to sense mechanical parameters in the biosystem; and

therapy-providing circuitry attached to the structure and adapted to be placed in the vessel with the structure, wherein the therapy-providing circuitry is adapted to provide therapy to the biosystem.

2. The device of claim 1, wherein the structure includes a stent-like structure adapted to be chronically placed in the biosystem.

3. The device of claim 2, wherein the stent-like structure is adapted to be chronically placed intravascularly in the biosystem.

4. The device of claim 1, wherein the sensing circuitry includes:

a sensor;

a sensor reader coupled to the sensor to provide an interface to the sensor;

a data digitizer coupled to the sensor reader to convert sensor data for transmission over a digital medium; and

a data encoder coupled to the digitizer to encode the sensor data.

5. The device of claim 4, wherein the sensor includes a pressure-based sensor.

6. The device of claim 5, wherein the sensor includes a piezoelectric crystal.

7. The device of claim 5, wherein the sensor includes a capacitive membrane sensor.

8. The device of claim 4, wherein the sensor includes an oxygen sensor.

9. The device of claim 4, wherein the sensor includes an impedance sensor.

10. The device of claim 4, wherein the sensing circuitry is fabricated using Micro-Electro-Mechanical Systems (MEMS) technology.

11. The device of claim 4, wherein the sensing circuitry is further adapted to sense electrical parameters in the biosystem.

12. The device of claim 4, wherein the sensing circuitry is further adapted to sense chemical parameters in the biosystem.

13. The device of claim 4, wherein the structure includes a stent-like structure adapted to be chronically placed in the biosystem.

14. The device of claim 13, wherein the stent-like structure is adapted to be chronically placed intravascularly in the biosystem.

15. The device of claim 1, wherein the therapy-providing circuitry includes:
an output capacitor charging circuit;
a set parameters circuit for adjusting stimulation parameters;

an electrical application circuit operably connected to the output capacitor charging circuit and the set stimulation parameters circuit to provide an electrical signal; and

at least one electrode operably connected to the electrical application circuit and adapted to provide electrical therapy.

16. The device of claim 15, wherein the set stimulation parameters circuit is adapted to adjust pulse width, amplitude stimulation modes, and stimulation site.

17. The device of claim 15, wherein the electrical application circuit includes an inject current circuit.

18. The device of claim 15, wherein the electrical application circuit includes a set voltage circuit.

19. The device of claim 15 wherein the therapy-providing circuitry is adapted to provide pacing therapy to a heart.

20. The device of claim 15, wherein the therapy-providing circuitry is adapted to provide defibrillation therapy to a heart.

21. The device of claim 15, wherein the structure includes a stent-like structure adapted to be chronically placed in the biosystem.

22. The device of claim 21, wherein the stent-like structure is adapted to be chronically placed intravascularly in the biosystem.

23. The device of claim 1, wherein the therapy-providing circuitry includes drug-eluting circuitry, including:

an active substance;

an electro-erodible covering enclosing the active substance; and

electrodes adapted to controllably erode the electrode covering to controllably release the active substrate.

24. The device of claim 23, wherein the electrodes are addressable to control the drug-eluting process.

25. The device of claim 23, wherein the electro-erodible covering is tapered to control the drug-eluting process.

26. The device of claim 23, wherein the therapy-providing circuitry is adapted to provide drug-eluting therapy in response to a heart-attack.

27. The device of claim 23, wherein the therapy-providing circuitry is adapted to provide drug-eluting therapy in response to a stroke.

28. The device of claim 23, wherein the therapy-providing circuitry is adapted to provide appropriate therapy in response to a sensed blood sugar level that is out of a desired range.

29. The device of claim 23, wherein the structure includes a stent-like structure adapted to be chronically placed in the biosystem.

30. The device of claim 29, wherein the stent-like structure is adapted to be chronically placed intravascularly in the biosystem.

31. The device of claim 1, further comprising power circuitry attached to the structure and coupled to the therapy-providing circuitry, wherein the power circuitry is adapted to provide power to the device.

32. The device of claim 31, wherein the power circuitry is adapted to provide power from a battery.

33. The device of claim 31, wherein the power circuitry is adapted to provide power from a biofuel cell.

34. The device of claim 31, wherein the power circuitry is adapted to provide power received wirelessly from an external device.

35. The device of claim 34, wherein the power circuitry is adapted to provide power received by radio-frequency (RF) energy from the external device.

36. The device of claim 34, wherein the power circuitry is adapted to provide power received by ultrasound energy from the external device.

37. The device of claim 31, wherein the power circuitry is adapted to provide power received through a tether that connects an external device to the power circuitry.

38. The device of claim 1, further comprising communication circuitry adapted to communicate with a control unit.

39. The device of claim 38, wherein the communication circuitry includes radio frequency (RF) circuitry for communicating with the control unit using RF waves.

40. The device of claim 39, wherein the RF circuitry includes an RF receiver adapted to receive RF transmission from the control unit.

41. The device of claim 40, wherein the RF circuitry further includes a data extractor coupled to the RF receiver to decode communication in the RF transmission.

42. The device of claim 39, wherein the RF circuitry includes an RF transmitter adapted to transmit RF transmission to the control unit.

43. The device of claim 42, wherein the RF circuitry further includes a data mixer coupled to the RF transmitter and adapted to encode communication for RF transmission.

44. The device of claim 1, wherein:

the sensing circuitry includes:

a sensor;

a sensor reader coupled to the sensor to provide an interface to the sensor;

a data digitizer coupled to the sensor reader to convert sensor data for transmission over a digital medium; and

a data encoder coupled to the digitizer to encode the sensor data; and

the therapy-providing circuitry includes:

an output capacitor charging circuit;

a set parameters circuit for adjusting stimulation parameters;

an electrical application circuit operably connected to the output capacitor charging circuit and the set stimulation parameters circuit to provide an electrical signal; and

at least one electrode operably connected to the electrical application circuit and adapted to provide electrical therapy.

45. The device of claim 44, wherein:

the sensing circuitry is further adapted to sense electrical parameters within the biosystem; and

the therapy-providing circuitry is adapted to provide electrical therapy to the biosystem.

46. The device of claim 44, wherein:

the sensing circuitry is further adapted to sense chemical parameters within the biosystem; and

the therapy-providing circuitry is adapted to provide electrical therapy to the biosystem.

47. The device of claim 44, wherein the structure includes a stent-like structure adapted to be chronically placed in the biosystem.

48. The device of claim 47, wherein the stent-like structure is adapted to be chronically placed intravascularly in the biosystem.

49. The device of claim 1, wherein:

the sensing circuitry includes:

a sensor;

a sensor reader coupled to the sensor to provide an interface to the sensor;

a data digitizer coupled to the sensor reader to convert sensor data for transmission over a digital medium; and

a data encoder coupled to the digitizer to encode the sensor data; and

therapy-providing circuitry includes:

an active substance;

an electro-erodible covering enclosing the active substance; and

electrodes adapted to controllably erode the electrode covering to controllably release the active substrate.

50. The device of claim 49, wherein:

the sensing circuitry is further adapted to sense electrical parameters within the biosystem; and

the therapy-providing circuitry is adapted to provide drug-eluting therapy to the biosystem.

51. The device of claim 49, wherein:

the sensing circuitry is further adapted to sense chemical parameters within the biosystem; and

the therapy-providing circuitry is adapted to provide drug-eluting therapy to the biosystem.

52. The device of claim 49, wherein the structure includes a stent-like structure adapted to be chronically placed in the biosystem.

53. The device of claim 52, wherein the stent-like structure is adapted to be chronically placed intravascularly in the biosystem.

54. A device, comprising:

a stent-like structure adapted to be chronically placed within a vessel of a biosystem;

sensing circuitry attached to the stent-like structure and adapted to be placed within the vessel with the structure and to sense mechanical parameters within the biosystem;

therapy-providing circuitry attached to the structure and adapted to be placed within the vessel with the structure and to provide therapy to the biosystem; and

control circuitry attached to the stent-like device coupled to the sensing circuitry and the therapy-providing circuitry, wherein the control circuitry is adapted to control sensing operations and therapy-providing operations.

55. The device of claim 54, wherein the stent-like structure is adapted to be chronically placed intravascularly within the biosystem.

56. The device of claim 55, wherein the stent-like structure is adapted to be placed using a catheter in a relatively noninvasive procedure.

57. The device of claim 55, wherein the stent-like structure is adapted to be placed using a hypodermic needle in a relatively noninvasive procedure.

58. The device of claim 54, wherein the sensing circuitry includes:

a sensor;

a sensor reader coupled to the sensor to provide an interface to the sensor;

a data digitizer coupled to the sensor reader to convert sensor data for transmission over a digital medium; and

a data encoder coupled to the digitizer to encode the sensor data.

59. The device of claim 54, wherein the sensing circuitry includes a pressure-based sensor.

60. The device of claim 59, wherein the sensing circuitry includes a piezoelectric crystal.

61. The device of claim 59, wherein the sensing circuitry includes a capacitive membrane sensor.

62. The device of claim 54, wherein the sensing circuitry includes an oxygen sensor.

63. The device of claim 54, wherein the sensing circuitry includes an impedance sensor.

64. The device of claim 54, wherein the sensing circuitry is adapted to sense hemodynamic parameters.

65. The device of claim 54, wherein the sensing circuitry is adapted to sense blood flow.

66. The device of claim 54, wherein the sensing circuitry is further adapted to sense electrical parameters within the biosystem.

67. The device of claim 66, wherein the sensing circuitry is adapted to detect cardiac arrhythmias.

68. The device of claim 54, wherein the sensing circuitry is further adapted to sense chemical parameters within the biosystem.

69. The device of claim 68, wherein the sensing circuitry is adapted to sense oxygen saturation in blood.

70. The device of claim 68, wherein the sensing circuitry is adapted to sense blood sugar levels.

71. The device of claim 54, wherein the sensing circuitry is fabricated with Micro-Electro-Mechanical Systems (MEMS) technology.

72. The device of claim 54, wherein the therapy-providing circuitry includes:

an output capacitor charging circuit;

a set parameters circuit for adjusting stimulation parameters;

an electrical application circuit operably connected to the output capacitor charging circuit and the set stimulation parameters circuit to provide an electrical signal; and

at least one electrode operably connected to the electrical application circuit and adapted to provide electrical therapy.

73. The device of claim 72, wherein the set stimulation parameters circuit is adapted to adjust pulse width, amplitude stimulation modes, and stimulation site.

74. The device of claim 72, wherein the electrical application circuit includes an inject current circuit.

75. The device of claim 72, wherein the electrical application circuit includes a set voltage circuit.

76. The device of claim 54, wherein the therapy-providing circuitry includes drug-eluting circuitry, including:

an active substance;

an electro-erodible covering enclosing the active substance; and

electrodes adapted to controllably erode the electrode covering to controllably release the active substrate.

77. The device of claim 76, wherein the electrodes are addressable to control the drug-eluting process.

78. The device of claim 76, wherein the electro-erodible covering is tapered to control the drug-eluting process.

79. The device of claim 54, wherein:

the sensing circuitry is further adapted to sense electrical parameters within the biosystem; and

the therapy-providing circuitry is adapted to provide electrical therapy to the biosystem.

80. The device of claim 54, wherein:

the sensing circuitry is further adapted to sense chemical parameters within the biosystem; and

the therapy-providing circuitry is adapted to provide electrical therapy to the biosystem.

81. The device of claim 54, wherein:

the sensing circuitry is further adapted to sense electrical parameters within the biosystem; and

the therapy-providing circuitry is adapted to provide drug-eluting therapy to the biosystem.

82. The device of claim 54, wherein:

the sensing circuitry is further adapted to sense chemical parameters within the biosystem; and

the therapy-providing circuitry is adapted to provide drug-eluting therapy to the biosystem.

83. The device of claim 54, further comprising power circuitry attached to the structure and coupled to the sensing circuitry and the therapy-providing circuitry.

84. The device of claim 83, wherein the power circuitry is adapted to provide power from a battery.

85. The device of claim 83, wherein the power circuitry is adapted to provide power from a biofuel cell.

86. The device of claim 83, wherein the power circuitry is adapted to provide power received wirelessly from an external device.

87. The device of claim 83, wherein the power circuitry is adapted to provide power received by radio-frequency (RF) energy from the external device.

88. The device of claim 83, wherein the power circuitry is adapted to provide power received by ultrasound energy from the external device.

89. The device of claim 83, wherein the power circuitry is adapted to provide power received through a tether that connects power from an external device to the power circuitry.

90. The device of claim 54, further comprising communication circuitry adapted to communicate wirelessly to an external device.

91. The device of claim 90, further comprising communication circuitry adapted to communicate to an external device using radio frequency (RF) energy.

92. The device of claim 54, further comprising communication circuitry adapted to communicate to an external device through a tether that connects the device to the external device.

93. The device of claim 54, further comprising communication/power circuitry attached to the structure, wherein:

the communication/power circuitry is adapted to communicate with an external device; and

the communication/power circuitry is adapted to receive power from the external device and power the therapy-providing circuitry, the sensing circuitry, and the controller.

94. The device of claim 93, wherein:

the communication/power circuitry is adapted to communicate wirelessly to the external device using a communication signal; and

the communication/power circuitry is adapted to receive power wirelessly from the external device using a power signal.

95. The device of claim 93, wherein the communication signal is modulated with the power signal.

96. A system, comprising:

a planet; and

at least one satellite device adapted to communicate with the planet, wherein the satellite device includes:

a structure adapted to be chronically placed within a vessel of a biosystem;

sensing circuitry attached to the structure and adapted to be placed in the vessel with the structure, wherein the sensing circuitry is adapted to sense mechanical parameters in the biosystem; and

therapy-providing circuitry attached to the structure and adapted to be placed in the vessel with the structure, wherein the therapy-providing circuitry is adapted to provide therapy to the biosystem.

97. The system of claim 96, wherein a tether couples the at least one satellite device to the planet.

98. The system of claim 97, wherein the tether provides a data communication channel.

99. The system of claim 97, wherein the tether provides a power connection between the satellite device and the planet.

100. The system of claim 97, wherein the tether includes dedicated data and power lines.

101. The system of claim 96, wherein the satellite device communicates with the planet wirelessly.

102. The system of claim 101, wherein the satellite device communicates with the planet using radio frequency (RF) waves.

103. The system of claim 102, wherein the device structure functions as an antenna for RF communications.

104. The system of claim 96, wherein the satellite device is powered by a battery.

105. The system of claim 96, wherein the satellite device is powered by a biofuel cell.

106. The system of claim 96, wherein the satellite device is powered by radio frequency (RF) energy from the planet.

107. The system of claim 96, wherein the satellite device is powered by ultrasound energy from the planet.

108. The system of claim 96, wherein at least one of the satellite devices functions as a repeater for communication transmissions.

109. The system of claim 96, wherein the structure of the device is that of a stent.

110. The system of claim 96, wherein the sensing circuitry includes:

a sensor;

a sensor reader coupled to the sensor to provide an interface to the sensor;

a data digitizer coupled to the sensor reader to convert sensor data for transmission over a digital medium; and

a data encoder coupled to the digitizer to encode the sensor data.

111. The system of claim 110, wherein the sensor includes a pressure-based sensor.

112. The system of claim 111, wherein the sensor includes a piezoelectric crystal.

113. The system of claim 111, wherein the sensor includes a capacitive membrane sensor.

114. The system of claim 110, wherein the sensor includes an oxygen sensor.

115. The system of claim 110, wherein the sensor includes an impedance sensor.

116. The system of claim 110, wherein the sensing circuitry is fabricated using Micro-Electro-Mechanical Systems (MEMS) technology.

117. The system of claim 110, wherein the sensing circuitry is further adapted to sense electrical parameters in the biosystem.

118. The system of claim 110, wherein the sensing circuitry is further adapted to sense chemical parameters in the biosystem.

119. The system of claim 110, wherein the structure includes a stent-like structure adapted to be chronically placed in the biosystem.

120. The system of claim 119, wherein the stent-like structure is adapted to be chronically placed intravascularly in the biosystem.

121. The system of claim 96, wherein the therapy-providing circuitry includes:

an output capacitor charging circuit;

a set parameters circuit for adjusting stimulation parameters;

an electrical application circuit operably connected to the output capacitor charging circuit and the set stimulation parameters circuit to provide an electrical signal; and

at least one electrode operably connected to the electrical application circuit and adapted to provide electrical therapy.

122. The system of claim 121, wherein the set stimulation parameters circuit is adapted to adjust pulse width, amplitude stimulation modes, and stimulation site.

123. The system of claim 121, wherein the electrical application circuit includes an inject current circuit.

124. The system of claim 121, wherein the electrical application circuit includes a set voltage circuit.

125. The system of claim 121 wherein the therapy-providing circuitry is adapted to provide pacing therapy to a heart.

126. The system of claim 121, wherein the therapy-providing circuitry is adapted to provide defibrillation therapy to a heart.

127. The system of claim 121, wherein the structure includes a stent-like structure adapted to be chronically placed in the biosystem.

128. The system of claim 127, wherein the stent-like structure is adapted to be chronically placed intravascularly in the biosystem.

129. The system of claim 96, wherein the therapy-providing circuitry includes drug-eluting circuitry, including:

an active substance;

an electro-erodible covering enclosing the active substance; and

electrodes adapted to controllably erode the electrode covering to controllably release the active substrate.

130. The system of claim 129, wherein the electrodes are addressable to control the drug-eluting process.

131. The system of claim 129, wherein the electro-erodible covering is tapered to control the drug-eluting process.

132. The system of claim 129, wherein the therapy-providing circuitry is adapted to provide drug-eluting therapy in response to a heart-attack.

133. The system of claim 129, wherein the therapy-providing circuitry is adapted to provide drug-eluting therapy in response to a stroke.

134. The system of claim 129, wherein the therapy-providing circuitry is adapted to provide appropriate therapy in response to a sensed blood sugar level that is out of a desired range.

135. The system of claim 129, wherein the structure includes a stent-like structure adapted to be chronically placed in the biosystem.

136. The system of claim 135, wherein the stent-like structure is adapted to be chronically placed intravascularly in the biosystem.

137. A method, comprising:
inserting a device intravascularly into a biosystem;
sensing a mechanical parameter using the device; and
providing therapy using the device.

138. The method of claim 137, wherein inserting a device intravascularly includes inserting a stent intravascularly.

139. The method of claim 137, wherein inserting a device intravascularly includes inserting a plurality of devices intravascularly to function together as a system.

140. The method of claim 137, wherein inserting a device intravascularly includes arterially inserting a device.

141. The method of claim 137, wherein sensing a mechanical parameter includes sensing blood pressure.

142. The method of claim 137, wherein sensing a mechanical parameter includes sensing blood flow.

143. The method of claim 137, wherein sensing a mechanical parameter includes sensing vessel size.

144. The method of claim 137, further comprising sensing oxygen.

145. The method of claim 137, further comprising sensing ions.

146. The method of claim 137, further comprising sensing coagulation.

147. The method of claim 137, further comprising sensing fibrosis.

148. The method of claim 137, further comprising sensing intrinsic electrical signals generated by excitable tissue.

149. The method of claim 137, wherein providing therapy includes stimulating electrically excitable tissue.

150. The method of claim 149, wherein stimulating electrically excitable tissue includes providing cardiac stimulus signals.

151. The method of claim 137, wherein providing therapy includes eluting drugs to improve biocompatibility.

152. The method of claim 137, wherein providing therapy includes eluting drugs in response to a detected stroke condition.

153. The method of claim 137, wherein providing therapy includes eluting drugs in response to a detected heart attack condition.

154. The method of claim 137, wherein providing therapy includes eluting an active substance in response to a sensed blood sugar level.

155. A device, comprising:

a structure adapted to be chronically placed within a vessel of a biosystem;

sensing circuitry attached to the structure and adapted to be placed in the vessel with the structure, wherein the sensing circuitry includes a chemical sensor; and

therapy-providing circuitry attached to the structure and adapted to be placed in the vessel with the structure, wherein the therapy-providing circuitry is adapted to provide therapy to the biosystem.

156. A device, comprising:

a structure adapted to be chronically placed within a vessel of a biosystem;

sensing circuitry attached to the structure and adapted to be placed in the vessel with the structure, wherein the sensing circuitry includes a biosensor; and

therapy-providing circuitry attached to the structure and adapted to be placed in the vessel with the structure, wherein the therapy-providing circuitry is adapted to provide therapy to the biosystem.

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